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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,976	06/04/2001	Akihiko Hosono	401225	3480
23548	7590	08/10/2004	EXAMINER	
LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960			TRAN, THANH Y	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/871,976

Applicant(s)

HOSONO ET AL.

Examiner

Thanh Y. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,9 and 13-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9,13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1 and 15-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Drawings***

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show a “continuous film” as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 15-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamoto (U.S. 6,097,138).

As to claim 1, Nakamoto discloses in figures 1A-1B a structure including a carbon body (see the plurality of carbon nanotubes 16 in figure 1A), comprising a substrate (12); and a body consisting essentially of carbon and disposed on the substrate (12), the body consisting essentially of carbon having a plurality of continuously connected intersecting walls transverse to the substrate (see Fig. 1A, col. 5, lines 1-12, the plurality of overlapped carbon nanotubes 16 establish the “continuously connected intersecting walls transverse the substrate”).

As to claim 15, Nakamoto discloses in figures 1A-1B an electric field emission electron source including: a substrate (12); and a body consisting essentially of carbon (see the plurality of carbon nanotubes 16 in figure 1A) and disposed on the substrate (12) as an electron emitting member (see element 14, col. 6, lines 54-58) for emitting electrons, the body consisting essentially of carbon having a plurality of continuously connected intersecting walls transverse to the substrate (see Fig. 1A, col. 5, lines 1-12, the plurality of overlapped carbon nanotubes 16 establish the “continuously connected intersecting walls transverse the substrate”).

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As to claim 16, figure 1A of Nakamoto shows the continuously connected intersecting walls define perimeters of openings that are located between intersections of the continuously connected intersecting walls.

As to claim 17, figure 9C of Nakamoto shows an electric field emission electron source, including: a cathode electrode (28) for supplying electrons to the body consisting essentially of carbon, and an extraction electrode (54) for generating an electric field for inducing emission of electrons from the body consisting essentially of carbon, wherein the body (comprising a plurality of elements 16) consisting essentially of carbon is positioned opposite the cathode electrode (28), contacting the cathode electrode (28), and the extraction electrode (54) is positioned surrounding the body consisting essentially of carbon without overlapping the body consisting essentially of carbon, when viewed in a direction transverse to the substrate (12).

As to claim 18, figure 9C of Nakamoto shows an electric field emission electron source, including: a cathode electrode (28) for supplying electrons to the body consisting essentially of carbon, and a backside extraction electrode (54), positioned at a rear side of the body of carbon (comprising a plurality of elements 16), for generating, from the rear side of the body consisting essentially of carbon, an electric field for inducing emission of electrons from a front side of the body consisting essentially of carbon, the front side of the body consisting essentially of carbon being opposite the rear side of the body consisting essentially of carbon, wherein the cathode electrode (28) is positioned opposite the backside extraction electrode (54), and the body consisting essentially of carbon is positioned opposite the cathode electrode (28), and contacting the cathode electrode (28).

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As to claim 19, figure 9C of Nakamoto shows an electric field emission electron source, wherein the cathode electrode (28) is located only at a periphery of the body consisting essentially of carbon (see elements 16).

As to claim 20, figure 9C of Nakamoto shows an electric field emission electron source, wherein the cathode electrode (28) is positioned outside the backside extraction electrode (54) and not overlapping the backside extraction electrode (54), when viewed in a direction perpendicular to the substrate (12).

As to claim 21, figure 1A of Nakamoto shows the continuously connected intersecting walls define perimeters of openings that are located between intersections of the continuously connected intersecting walls.

As to claim 22, figure 5B of Nakamoto shows a continuous film (34) in the openings at the substrate (12).

As to claim 23, figure 1A of Nakamoto shows wherein the body (see element 26) consisting essentially of carbon includes at least one of hexagonal crystalline phase.

As to claim 24, Nakamoto discloses in figures 1A-1B a structure including a carbon body (see the plurality of carbon nanotubes 16 in figure 1A), wherein the walls have an average thickness on the substrate not exceeding 100nm ("30 nm or less") (see Fig. 1A, col. 5, lines 1-13).

As to claim 25, Nakamoto discloses in figures 1A-1B a structure including a carbon body (see the plurality of carbon nanotubes 16 in figure 1A), wherein the walls are continuously connected electrically. It should be noted that: since the walls of carbon are continuously connected and electrically connected with conductive projection 118 as

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shown in figure 11B (see col. 13, lines 43-53), thus the walls in figure 1A of Nakamoto are considered to be continuously connected electrically.

As to claim 26, Nakamoto discloses in figures 1A-1B a structure including a carbon body (see the plurality of carbon nanotubes 16 in figure 1A), wherein the substrate (12) is glass (see col. 4, lines 60-67).

As to claim 27, figures 4B and 5B of Nakamoto show the openings are aligned along a common direction.

As to claim 28, figures 4B and 5B of Nakamoto show the direction is transverse to the substrate (12).

#### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1 and 15-28 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Contact Information**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on Monday through Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo, can be reached on (571) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TYT

8/2/04

  
**DAVID ZARNEKE**  
**PRIMARY EXAMINER**